

Chapter 3 States of Matter

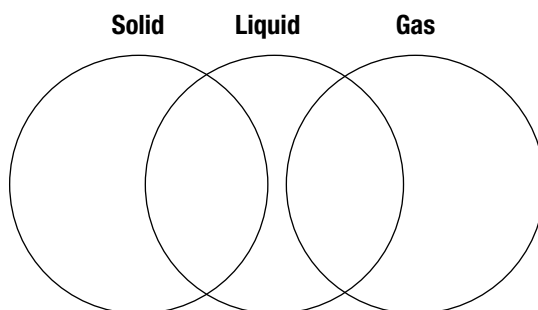
## Section 3.1 Solids, Liquids, and Gases

(pages 68–73)

*This section explains how materials are classified as solids, liquids, or gases. It also describes the behavior of these three states of matter.*

### Reading Strategy (page 68)

**Comparing and Contrasting** As you read about the states of matter, replace each letter in the diagram below with one of these phrases: *definite volume*, *definite shape*, *variable volume*, or *variable shape*. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.



### Describing the States of Matter (pages 68–70)

1. What are three common states of matter?  
 a. \_\_\_\_\_ b. \_\_\_\_\_ c. \_\_\_\_\_
2. Is the following sentence true or false? The fact that a copper wire can be bent shows that some solids do not have a definite shape.  
 \_\_\_\_\_
3. Circle the letter of each phrase that describes how particles at the atomic level are arranged within most solids.
 

a. randomly arranged	b. packed close together
c. arranged in a regular pattern	d. spaced far apart
4. Is the following sentence true or false? A liquid takes the shape of its container. \_\_\_\_\_
5. What is the state of matter in which a material has neither a definite shape nor a definite volume? \_\_\_\_\_
6. Compare and contrast the arrangement of particles at the atomic level for a liquid and a solid. \_\_\_\_\_  
 \_\_\_\_\_
7. What determines the shape and volume of a gas? \_\_\_\_\_  
 \_\_\_\_\_
8. On the sun, where temperatures are extremely high, matter exists in a state known as \_\_\_\_\_.

**Chapter 3 States of Matter**

9. The state of matter that can exist at extremely \_\_\_\_\_ temperatures is called a Bose-Einstein condensate.

10. Complete the table about states of matter.

States of Matter		
State	Shape	Volume
	Definite	
Liquid		
		Not definite

**Kinetic Theory (page 71)**

11. Describe kinetic energy. \_\_\_\_\_  
 \_\_\_\_\_

12. Circle the letter of the phrase that describes all particles of matter in the kinetic theory of matter.

- a. randomly arranged
- b. constant temperature
- c. in constant motion
- d. orderly arrangement

**Explaining the Behavior of Gases (pages 72–73)**

13. Is the following sentence true or false? There are forces of attraction among the particles in all matter. \_\_\_\_\_

14. Why can scientists ignore the forces of attraction among particles in a gas under ordinary conditions? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

15. Is the following sentence true or false? Because of the constant motion of the particles in a gas, the gas has a definite shape and volume. \_\_\_\_\_

**Explaining the Behavior of Liquids (page 73)**

16. Do forces of attraction have a stronger effect on the behavior of the particles in a gas or in a liquid? \_\_\_\_\_

17. Circle the letter of each factor that affects the behavior of liquids.

- a. fixed location of particles
- b. constant motion of particles
- c. orderly arrangement of particles
- d. forces of attraction among particles

**Explaining the Behavior of Solids (page 74)**

18. Solids have a(n) \_\_\_\_\_ volume and shape because particles in a solid vibrate in \_\_\_\_\_ locations.